Eco Mark Product Category No.109

# “Tile-block Version2.8”
# Certification Criteria

—Applicable Scope—

(1) Ceramic tiles
Ceramics tiles corresponding to categories “Ceramic tile” of JIS A 5209 or “Ceramic tile” of ISO 13006.
(2) Bricks and blocks
Bricks and blocks corresponding to categories “Common bricks (including recycled materials defined in ‘3. Terminology’ below as the raw material of bricks)” of JIS R1250, “Clay pipes” of JIS R1201, “Ceramic masonry units for buildings” of JIS A 5210, “Pre-cast plain concrete products” of JIS A 5371Class I (covered conduit concrete block for paving and boundary, drain ditch for road surface, concrete-block retaining wall, etc.), “concrete blocks for buildings” of JIS A 5406, “glass blocks (hollow)” of JIS A5212, and “Interlocking blocks” of JASS 7M-101 of the Architectural Institute of Japan (common interlocking block, permeable interlocking block, interlocking block for vegetation, interlocking block for guiding visually handicapped persons and water-retentive interlocking block).
(3) Other tiles and blocks
Products made of aggregates bound by binding material such as resin, which corresponds to (1) “Ceramic tiles” or (2) “Bricks and blocks” above.

Established: September 1, 2003
Last revised: April 1, 2017
Expiration: August 31, 2021

Japan Environment Association
Eco Mark Office

NOTE: This document is a translation of the criteria written in Japanese. In the event of dispute, the original document should be taken as authoritative.

Eco Mark Product Category No.109

# "Tile-block Version2.8" Certification Criteria

Japan Environment Association
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## 1. Purpose of Establishing Certification Criteria

Looking at the material flow in Japan, 2.04 billion tons of resources are used annually (total volume of resources used), 50% of which are consumed and disposed. Of all wastes disposed, 0.22 billion tons are recycled. Equivalent to 10% of the total volume of resources used (White Paper on the Environment, 2001), it demonstrates the considerable efforts still required to realize a recycling-oriented community.

To promote recycling throughout the entire community against this background, the Basic Law for Establishing the Recycling-based Society was enacted in January 2001. This law summarizes the priority of waste reduction measures in the order of (1) reduced emission, (2) reuse of products and parts, (3) recycling as materials, and heat recovery. Since the reuse and recycling processes can sometimes consume substantial volumes of resources, the need to reduce wastes first and foremost by facilitating long-life products and simplified packaging is emphasized.

Product Category No. 109 "Tile-blocks Made from Recycled Materials" established in 1997 recommends the use of recycled materials for manufacturing tile-blocks to reduce the consumption of natural resources, as well as the effective use of construction wastes, incineration ash, and sewage sludge as a means of waste recycling. Version 2.0 of this product category continues to focus on promoting waste recycling by increasing and spreading the use of tile-blocks made of recycled materials, in addition to giving consideration to indicating the correct uses and management methods of products and the reduction of packaging material to contribute to product reuse.

## 2. Applicable Scope

(1) Ceramic tiles

Ceramics tiles corresponding to categories "Ceramic tile" of JIS A 5209 or "Ceramic tile" of ISO 13006.

(2) Bricks and blocks

Bricks and blocks corresponding to categories "Common bricks (including recycled materials defined in '3. Terminology' below as the raw material of bricks)" of JIS R1250, "Clay pipes" of JIS R1201, "Ceramic masonry units for buildings" of JIS A 5210, "Pre-cast plain concrete products" of JIS A 5371Class I (covered conduit concrete block for paving and boundary, drain ditch for road surface, concrete-block

retaining wall, etc.), "concrete blocks for buildings" of JIS A 5406, "glass blocks (hollow)" of JIS A5212, and "Interlocking blocks" of JASS 7M-101 of the Architectural Institute of Japan (common interlocking block, permeable interlocking block, interlocking block for vegetation, interlocking block for guiding visually handicapped persons and water-retentive interlocking block).

(3) Other tiles and blocks
Products made of aggregates bound by binding material such as resin, which corresponds to (1) "Ceramic tiles" or (2) "Bricks and blocks" above.

## 3. Terminology

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|---|---|
| Recycled materials | Post-consumer materials or pre-consumer materials, or the combination of both. |
| Post-consumer materials | Materials falling under either of the following categories and which have undergone the required pre-treatment.<br>(1) Materials or products disposed of after they were used as goods.<br>(2) Melted slag from municipal garbage. |
| Pre-consumer materials | Materials falling under either of the following categories and which have undergone the required pretreatment.<br>(1) Materials or inferior goods generated in the disposal route of the manufacturing process of products. Excluded is reuse of recycled materials generated in the same process (in the same plant).<br>(2) Solid materials removed for water purification (sewer sludge, waterworks sludge and sludge at the bottom of a lake or marsh) and construction sludge |
| Standard mixture amount | The percentage of recycled materials used in respect to all the materials (including sub-materials such as additives, and binding materials like clay, resin and cement) used for manufacturing a product (weight %); thus,<br><br>standard mixture amount = recycled materials/all materials of a product.<br><br>For products containing water, naturally dried weight shall be used. For fired products, figures calculated by excluding the weight lost by firing shall be used.<br>For products using cement such as blocks, mixing water shall be included in the total materials, and figures calculating these materials shall be used; thus<br><br>standard mixture amount = recycled materials/all materials including the mixing water of a product. |
| Interlocking block for vegetation | Products which correspond to "Interlocking block" of JASS 7M-101, and are used for landscaping (for example, blocks filled with earth and used for planting grass). However, this excludes products for which cavities are created depending on the method used for installing several blocks. |

| | |
|---|---|
| Lightweight aggregate | Aggregate used for reducing concrete weight and improving adiathermancy, the absolute dry density of which is less than 2.0 g/cm3 for coarse aggregate and less than 2.3 g/cm3 for fine aggregate. |

## 4. Certification Criteria and Certification Procedure

### 4-1. Environmental Criteria and Certification Procedure

To show conformance to the individual criteria item, the respective Attached Certificates shall be submitted.

(1) Products shall use “recycled materials” that are defined above and shall also be processed as designated according to the material category given in (attached) Table 1

[Certification Procedure]
For recycled materials, documents certifying the contents of materials and details of the pre-treatment implemented, issued by the material supplier, shall be submitted..

(2) The percentage of the recycled materials mentioned above for tile-blocks shall be at least the standard mixture amount shown in Table 1. “Glass blocks (hollow)” shall contain 100% glass cullet. However, products that are made of several recycled materials or products that fall under several categories of Table 1 in terms of the standard mixture amount shall satisfy the standard mixture amount based on the proportional mixture using the following formula.

$$\frac{\text{mixture amount of a}}{\text{standard mixture amount of recycled material category a}} + \frac{\text{mixture amount of b}}{\text{standard mixture amount of recycled material category b}} \geqq 1$$

[(Products using A% of [Materials a of standard mixture amount 60% category] and B% of [Materials b of standard mixture amount 50% category])

$$A(\%)/60 + B(\%)/50 \geqq 1$$

Products corresponding to JIS R1201 "Clay pipes" having a recycled material weight percentage less than the standard mixture amount by up to 5 percentage points shall be accepted.

For products using recycled lightweight aggregate, calculate the mixture amount using the value calculated by the following formula.

Conversion formula of the mixture amount in the case of recycled lightweight aggregate:
1.7 / (Unit volume weight of recycled lightweight aggregate [g/cm$^3$]) × (mixture amount [weight %] of recycled lightweight aggregate)

[Certification Procedure]
A product weight certificate shall contain a kind(s) of recycled material(s), mixture ratio of a recycled material(s) to other material(s), total weight proportion (minimum guaranteed value) of all recycled materials, and a method of management.

(3) In manufacturing the applied product, related environmental laws and regulations and pollution control agreement (hereinafter referred to as the "Environmental Laws, etc.") must be followed with respect to air pollution, water contamination, noise, offensive odor, and emission of hazardous substances in the area where the plant performing the final manufacturing process is located.

In addition, the state of compliance with the Environmental Laws, etc. for the past five years from the date of application (whether there is any violation) must be reported. If there is any violation, proper remedies and preventive measures shall have been already taken, and the related Environmental Laws, etc. must thereafter be followed appropriately.

[Certification Procedure]
With respect to the compliance with the Environmental Laws, etc. in the area where the plant performing the final manufacturing process is located, a certificate issued by the representative of the business of manufacturing the applied product or the relevant plant manager (entry or attachment of a list of names of the Environmental Laws, etc.) must be submitted.
In addition, the applicants shall report whether there is any violation in the past five years, including a violation subject to administrative punishment or administrative guidance, and if there is, the following documents in a and b must be submitted:
a. With respect to the fact of violation, guidance documents from administrative agencies (including order of correction and warning) and copies of written answers (including those reporting causes and results of correction) to such documents (clearly indicating a series of communication);
b. Following materials (copies of recording documents, etc.) concerning the management system for compliance with the Environmental Laws, etc. in 1)-5):
   1) List of the Environmental Laws, etc. related to the area where the plant is located;
   2) Implementation system (organizational chart with roles, etc.);
   3) Bylaws stipulating retention of recording documents;
   4) Recurrence prevention measures (future preventive measures);
   5) State of implementation based on recurrence prevention measures (result of checking of the state of compliance, including the result of onsite inspection).

(4) Production processes with firing or fusion shall give consideration to the volume of $CO_2$ emission.

[Certification Procedure]
Emissions of $CO_2$ (excluding the pre-treatment stage of raw materials, and comparisons limited to the part of production that differs from when natural materials are used) per average product ton weight in the manufacturing of fired

or melted products shall be indicated with a comparison of fired or melted products not using recycled raw materials..

(5) Elusion of hazardous materials from products shall meet the requirements of all designated toxic substances in Attached Table 3 (December 26, 2002, Environment Ministerial Ordinance No. 29) of the enforcement regulations of the environmental standard concerning soil contamination. However, eight substances designated by elusion standards for goods manufactured at room temperature, melted products, and fired products using only recycled materials subject to melting treatment are: cadmium, lead, hexavalent chromium, arsenic, mercury, selenium, boron, and fluorine.

[Certification Procedure]
Documents certifying test results implemented by third party testing centers or public institutions shall be submitted.

(6) The content of hazardous materials in products shall satisfy the requirements of all designated toxic substances in Attached Table 4 (December 26, 2002, Environment Ministerial Ordinance No. 29) of the enforcement regulations of the environmental standard concerning soil contamination. However, eight substances designated by content standards for goods manufactured at room temperature, melted products, and fired products using only recycled materials subject to melting treatment are: cadmium, lead, hexavalent chromium, arsenic, mercury, selenium, boron, and fluorine.

[Certification Procedure]
Documents certifying test results implemented by third party testing centers or public institutions shall be submitted

(7) Products shall be recyclable after use, or discharge and disposal shall be as easy as current products.

[Certification Procedure]
Documents certifying reasons for conformity to this item issued by the manufacturer shall be submitted.

(8) Non-baking products of glass-concrete admixtures must conform to alkali-aggregate reaction control measures (August 2002, Ministry of Land, Infrastructure, and Transport). Detoxification tests are not required for products that undergo detoxification processing such as baking and coating after admixture with glass before being utilized for non-baking products.

[Certification Procedure]
Non-baking products of glass-concrete admixtures shall conform to alkali-aggregate reaction control measures, and the following shall be submitted: results of detoxification tests on verification of alkali-aggregate reaction and control measures based on JIS A 1145 (chemical method), JIS A 1146 (mortar bar method), or JIS A 5308 (ready-mix concrete Annexes 7 and 8), and documents explaining alkali-aggregate reaction control measures.

For products that undergo detoxification processing such as baking and coating after admixture with glass and before being utilized for non-baking products, the details shall be described in the Application Form for Eco Mark Certification/Use.

(9) Glass cullet shall undergo edgeless processing (melting, chamfering).

[Certification Procedure]
The edgeless processing method for glass cullet shall be described specifically in the Application for Eco Mark Certification and Usage.

(10) Product packaging shall be easy to recycle. However, plastic materials used for packaging shall not contain polymers including halogens and organic halogenides as prescribed components.

[Certification Procedure]
The product packaging state and packaging material used shall be indicated specifically in the attached certificate. (Drawings and photographs can be used in the description.)

(11) Information on the appropriate handling of and storage precautions for tiles, bricks, and blocks shall be indicated in instruction manuals, product labels, and pamphlets.

[Certification Procedure]
Instruction manuals, product labels, or pamphlets describing handling and storage precautions of the product shall be submitted.

(12)The product shall not use antimicrobial agents as far as possible. In the case of use, the product shall be certified by such as the SIAA Mark of Society of Industrial technology for Antimicrobial Articles.

[Certification Procedure]
Compliance (or lack thereof) with this item shall be indicated in the Attached Certificate. In the case of using antimicrobial agents, a copy of a certificate etc shall be submitted.

4-2. Quality Criteria and Certification Procedure

(1) The quality of products in this product category shall conform to the applicable provisions of JIS, JASS 7 and ISO standards for ceramic tiles, bricks and blocks. As for other tiles and blocks, products shall be of a similar quality as defined under the JIS and JASS 7 standards that apply similarly.

[Certification Procedure]
Copies of test results or certificates from JIS certified plants based on the corresponding quality criteria (including dimensions) shall be submitted.

## 5. Product Classification, Indication and Others

Omitted

Established: September 1, 2003 (Version 2.0)
Revised: Dec. 26, 2003（Eco Mark Usage）
Revised: June 10, 2004（2. Applicable Products revision of kinds of JIS A 5371）
Revised: July 1, 2004 (Version2.1 statements below Eco Mark）
Revised: October 19, 2006 (Version2.2, deletion of 6. Other Requirements)
Revised: April 13, 2007 (Version2.3)
Revised: August 21, 2008 (Version2.4, 4-1.(3))
Revised: November 4, 2009 (Version2.5)
Revised: March 1, 2011 (Version2.6, 5.Indication)
Revised: June 15, 2012 (Version2.7, 4-1.(12))
Revised: April 1, 2017 (Version2.8, 2.Applicable scope)
Expiration: August 31, 2021

The Certification Criteria for the Product Category will be revised when necessary.

**Table 1: Material category of recycled materials, certification for usage and standard mixture amount**

| Category and name of waste etc. for raw materials of recycled materials | | | Pre-treatment required for certification of recycled materials | | Standard Mixture Amount Note 5) (weight %) | |
|---|---|---|---|---|---|---|
| Category | | Name of recycled materials | Products formed at room temperature | Fired products | Products formed at room temperature | Fired products |
| Industrial wastes | Waste from mines and quarries | ·Waste sand from quarries and ceramics<br>·Micro silica sand generated at separation of silica by water | Applicable without pre-treatment | | 60% | 50% Note 3) Note 4) |
| | Waste from metal industry | ·Steel slag<br>·Casting sand<br>·Ceramic waste<br>·Copper slag<br>·Ferronickel slag<br>·Electric furnace slag | | | | |
| | Other industrial wastes | ·Coal ash<br>·Disposed plastics<br>·Shells<br>·Disposed lumber from buildings (sludge excluded)<br>·Disposed rubber<br>·Glass cullet | | | | |
| | | ·Construction sludge Note 7) | Changed into incinerated ashes or melted slag | Applicable without Pre-treatment | 50% | 40% Note 3) |
| Incinerated ashes and Sludge | Incinerated ashes | ·Incinerated ashes of municipal garbage<br>·Incinerated ashes of industrial wastes | Changed into melted slag (Note 2) | Changed into melted slag (Note 2) | | |
| | Sludge generated industrially | ·Paper manufacturing sludge<br>·Aluminum sludge<br>·Plating sludge<br>·Polishing sand sludge | Changed into incinerated ashes or melted slag | Applicable without Pre-treatment | 60% | 50% Note 3) |
| | Sludge generated in daily life | Sewer sludge | Changed into incinerated ashes or melted slag | Changed into incinerated ashes or melted slag | 50% | 40% Note 3) |

| | | | | | | |
|---|---|---|---|---|---|---|
| | and naturally | Waterworks sludge Sludge at bottom of lake, etc. | | Applicable without Pretreatment | | |

Note 1) Materials which belong to one of the above categories but not specified as waste etc. shall be given additional certification if deemed by the Eco Mark Committee for Product Certification as meeting the "Definitions of recycled materials" of this Product Category.

Note 2) Pre-treatments recognized to have the same safety as melted slag shall be screened and given additional certification by the Eco Mark Committee for Product Certification.

Note 3) For melted products containing small quantities of colorants, the weight of colorants shall not be included in the weight of all materials used for calculating the standard mixture amount.

Note 4) For hollow glass blocks, the standard mixture amount shall be taken as 100% (weight %) using only glass cullet as the recycled material.

Note 5) For products that are made of several recycled materials or products that fall under several categories at the standard mixture amount of the above table, calculate the standard mixture amount using the proportional mixture.

Example) Fired products and melted products using ceramic wastes and sewer sludge:

Ceramic waste A (%) Metallic industrial wastes (Standard mixture amount 50%)

Sewer sludge B (%) Sludge generated in daily life or naturally (Standard mixture amount 40%)

In this case, the standard mixture amount shall satisfy (A x 50 + B x 40)/(A + B).

Note 6) A color (solid color, brown, etc.) of a cullet to be used shall also be described.

Note 7) The conditions for discharging construction sludge and acceptance criteria for checking soil property shall be defined with reference to "Construction Sludge Recycling Manual" (Written and edited by Public Works Research Institute in December 2008), and only inorganic sludge that were subjected to appropriate treatment shall be used. Any construction sludge that does not conform to the environmental quality standards for soil based on the Environmental Basic Law and the content standard of specified toxic substances based on the Soil Contamination Countermeasures Law shall not be used unless it is subjected to proper processing so that it can conform to these standards.